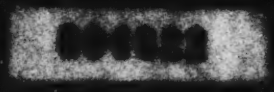

Rapid
Transit
Project

FINAL REPORT: SUMMARY

STUDY PARTICIPANTS

PRIME CONSULTANT

- **Metro Canada Limited**

SUB-CONSULTANTS

- **Transportation and Land Use Planning**
  Marshall, Macklin, Monaghan Limited
  Hatch Associates Limited
  Barton Myers Associates
- **Environmental Assessment**
  Marshall, Macklin, Monaghan Limited
  Hatch Associates Limited
- **Engineering**
  Cole Sherman Associates Limited
  The Proctor and Redfern Group
  T. J. Garwood-Jones, Architect
  J. Strasman, Architect
  The Trow Group
  ABAM Limited
- **Evaluation**
  M. M. Dillion Limited
- **Public Participation**
  Connor Development Services Limited
  Beak Consultants
  B. W. Gillespie and Associates
- **Noise and Vibration**
  Wilson, Ihrig Inc.
  Marshall, Macklin, Monaghan Limited
  Hatch Associates Limited
- **Soci-Economic Impact Assessment**
  Marketing Decision Research
  Prof. F. Jones, McMaster University
  IBI Group

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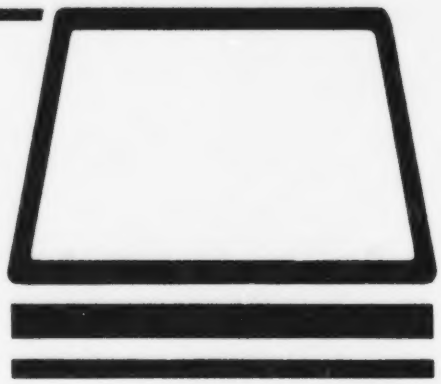


HAMILTON/
WENTWORTH

Rapid Transit Project

URBAN DOCUMENTATION CENTRE
RESEARCH UNIT FOR URBAN STUDIES
McMASTER UNIVERSITY
HAMILTON, ONTARIO

FINAL REPORT: SUMMARY

November 1981

metro canada limited

004822

FINAL REPORT: SUMMARY

The work of the study team of some of Ontario's best professional consultants who have examined the proposed rapid transit service for Hamilton-Wentworth has been completed.

The purposes of this study were to evaluate possible routes and station locations, recommend a preferred route, define the social, economic and transport implications of such a rapid transit system, prepare a draft Environmental Assessment Report and develop the preliminary design for Intermediate Capacity Transit System (ICTS) on the preferred route.

The study was also to confirm the ability of ICTS to meet unique transit demand and operating requirements specified for Hamilton and to report on the social and environmental impacts of installing and operating such a system relative to other available rapid transit technologies.

The following pages summarize the results of this study and deal with the major questions and issues that have arisen during the study. The rapid transit service under consideration is described, conclusions are presented as to its construction, and recommendations are provided concerning actions the Regional Municipality of Hamilton-Wentworth should take as part of their rapid transit construction program.

The final report of this study includes three documents as follows:

- Summary (What you are reading)
- Functional Plan
- Draft Environmental Assessment

These documents are supported by approximately 55 technical reports which are listed later in this summary.

The primary conclusions of these various studies are presented in the following pages.

RAPID TRANSIT IS NEEDED

REGIONAL POLICY

The issue of need for a rapid transit program cannot be separated from the Transportation Plan currently approved in support of the Regional Council's Official Plan adopted in 1980. The Regional Municipality adopted as a vital part of its Regional Plan a policy of preservation of the Niagara Escarpment and its environmentally attractive characteristics, particularly in the Central Mountain area. **In practical terms, this Official Plan means that no new roads will be added or widened crossing the Escarpment in this area.**

The primary result of this Policy is that the existing roads crossing the Escarpment in the central Mountain area will be strained by the mid-1990's. The exact time when this will happen depends on the rates of housing growth, car use and ownership, and employment market participation on the Mountain.

As it is certain that the existing Mountain access roads will be seriously congested in the early 1990's, a reliable, all-weather rapid transit service, as proposed, will be required to begin serving people in the central Mountain corridor. **To be ready for revenue service in time, design and construction of this service will have to begin.**

Following an analysis of traffic projections and a review of the Region's Official Plan, there can be no other conclusions drawn from a review of the various analyses and studies completed for the municipality than:

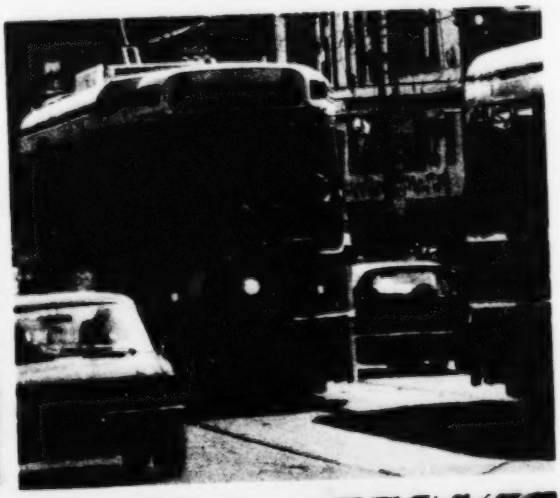
(a) Within the immediate future the Regional Municipality of Hamilton-Wentworth will have to begin design and construction of the first stage of a rapid transit system in the central Mountain area. To fail to do so would be to abandon the approved and accepted Official Regional development plan. An alternative plan would be then required.

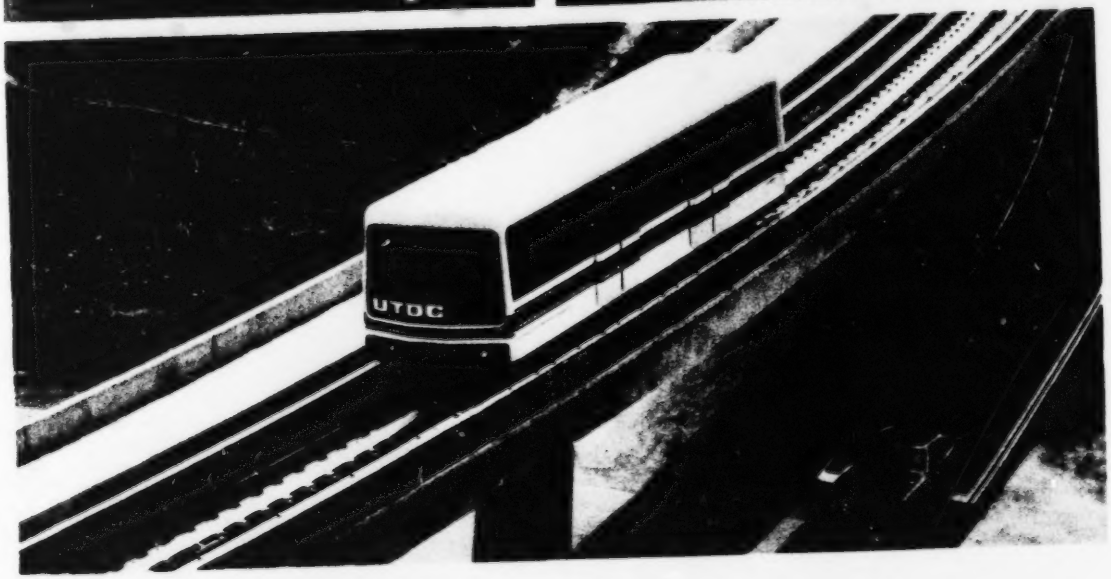
(b) Any alternative plan would be forced to include substantial expansion of existing, and construction of new, road facilities in the Central Mountain area, not only across the escarpment, but also through the lower city and the Mountain residential communities.

Emphasis on **rapid transit now** is an essential part of the transportation and environmental protection policy approved by Regional Council when it adopted the Official Plan in 1980. Transit expansion was and is a critical element of this Plan.

ALTERNATIVE TRANSIT MODES

An important component of this study has been the analysis and comparison of the abilities of other transit modes and systems, in addition to ICTS, bearing in mind the particular needs of Hamilton-Wentworth. This





study confirms the selection of ICTS as the transit system most suited to Hamilton-Wentworth.

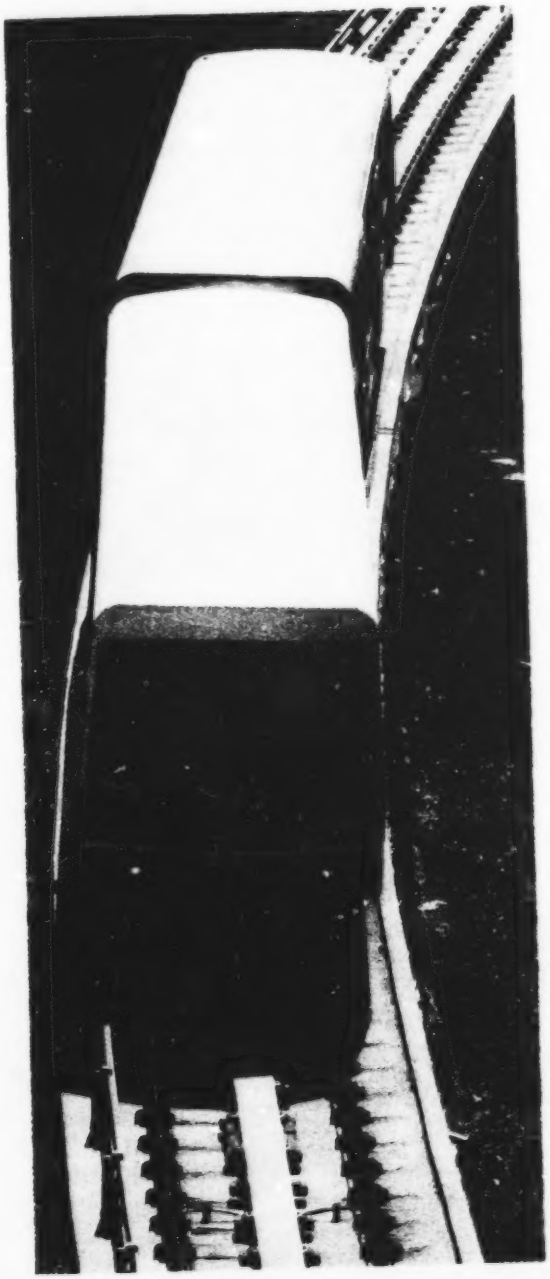
The study, prepared by Marshall Macklin Monaghan, included analysis of fully underground systems, streetcars operating on or off-street, trolley coach networks, and improved diesel bus systems as defined by the Region's Technical Committee. The study finds that **ICTS can provide the best transit service in accordance with Regional plans with the least impact on automobile traffic. The other rapid transit systems considered resulted in higher cost than the proposed ICTS to construct and operate, and either provided less service to transit passengers, imposed severe restrictions on automobile and pedestrian traffic, or created a combination of these impacts.**

The transit modes studied fall into two categories: road-based bus systems (diesel bus and/or trolley coach, with or without priority over automobile and truck traffic) and rail-based rapid transit systems (streetcar with or without priority), and ICTS elevated or underground).

All of the road-based bus systems suffer from three major shortcomings. First, since they operate on-street, in or adjacent to automobile and pedestrian traffic, they are subjected to road congestion, and are unable to provide a reliable high quality transportation alternative to the private automobile. Secondly, they do not provide the rapid transit service called for in the Region's transportation plans for the central Mountain. Thirdly and most importantly, they require road space on the Mountain accesses which is and will be at a premium. If the Region relies on road-based bus systems crossing the escarpment, then it must provide road space for these buses, either by adding costly lanes to the existing access roads, or by further restricting the total automobile flow across the escarpment in rush hours thereby forcing car drivers onto buses. Both of these circumstances will result in the breakdown of the transportation system as it is now envisaged, and the abandonment of the Region's approved plans.

The rail-based transit systems offer an attractive alternative to the bus systems from pollution, environmental, and energy consumption points-of-view. The two streetcar alternatives, on-street and exclusive right-of-way, create severe impacts on roadway traffic on the Mountain and in the downtown. Existing road capacity would be substantially reduced and some streets would have to be closed. ICTS is able to provide the required transportation service without substantial impacts on road traffic, and the elevated ICTS as proposed is able to provide the service at a much lower cost than the others.

These findings confirm Regional Council's 1980 decision to request a full study of ICTS for the central Mountain corridor.



TRANSIT SERVICE

When the proposed rapid transit service is constructed, it will serve approximately 30,000 riders daily, starting on its proposed opening day in 1986, and 8,200,000 riders annually. This forecast was prepared by the sub-consultants, Marshall, Macklin, Monaghan/Hatch Associates, and is based on data provided by the Region.

They also forecast ridership of 65,000 per day and 19.5 million passengers per year in the year 2001.

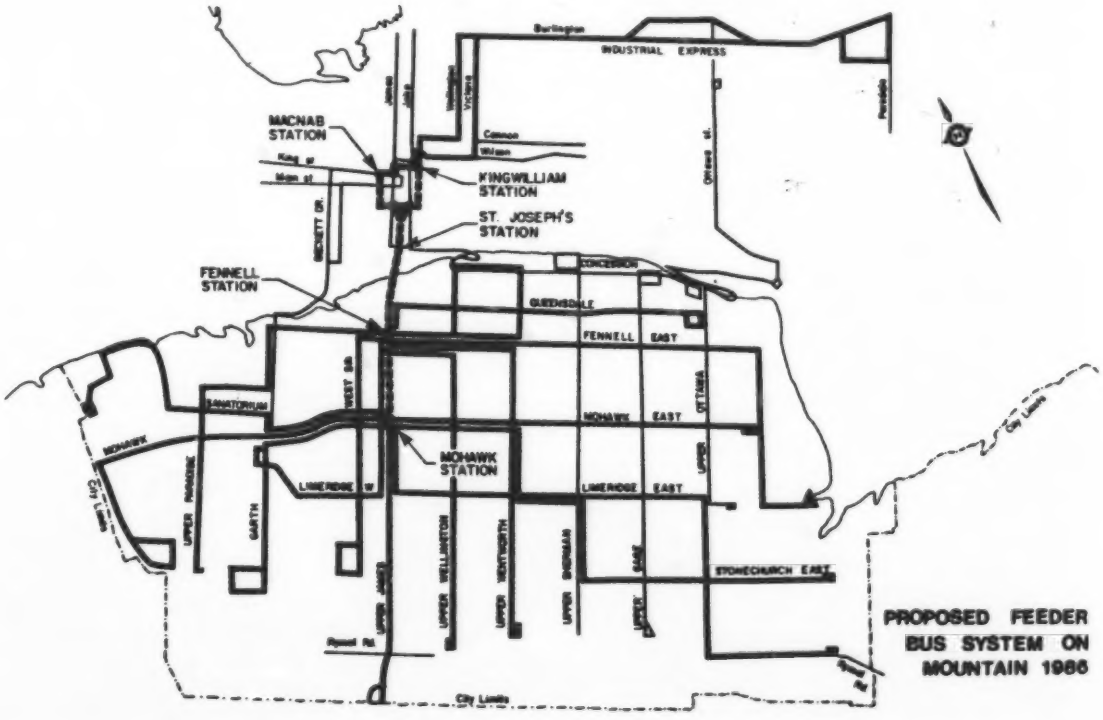
These numbers are particularly significant because the projected figures are based on an assumption that no one who now drives to work would switch to public transit, and that many new travellers will drive rather than use transit. These figures then are likely to increase even further as the Regional Council has now adopted a policy to promote greater use of public transit. In addition, recent federal/provincial agreements have now established that gasoline will cost $4.00 per gallon by 1986. Early construction of a rapid transit service would ensure residents an increased range of transportation choice, when they would need it most.

The proposed rapid transit service can be the initial spine of an improved and expanded public transit system which will better serve the needs of this community for years to come.

The Mountain-to-downtown corridor represents the highest transit ridership corridor in the Region of Hamilton-Wentworth.

It is clear that the present proposed Rapid Transit system in the Mountain corridor should be the central element in the implementation of an expanded region-wide integrated transit system which would include:

- the proposed Mountain Corridor Rapid Transit System;
- an expanded future Rapid Transit to service the Bayfront industrial area, an East/West system, and future southerly extension of the proposed system;
- expanded use of priority bus measures including express bus service to areas awaiting rapid transit;
- an integrated downtown transportation terminal including expanded GO and other inter-regional and inter-city services.



PROPOSED FEEDER BUS SYSTEM ON MOUNTAIN 1986

URBAN DOCUMENTATION CENTRE
RESEARCH UNIT FOR URBAN STUDIES
McMASTER UNIVERSITY
HAMILTON, ONTARIO

ECONOMIC DEVELOPMENT

It is understood that the stimulation and development of the local economy has been one of the Region's primary objectives in recent years. The formation of the Economic Development department and the promotional activities of this department have already had a positive influence on the economic stature of the community. As the consultant's study concludes, rapid transit will support these development activities.

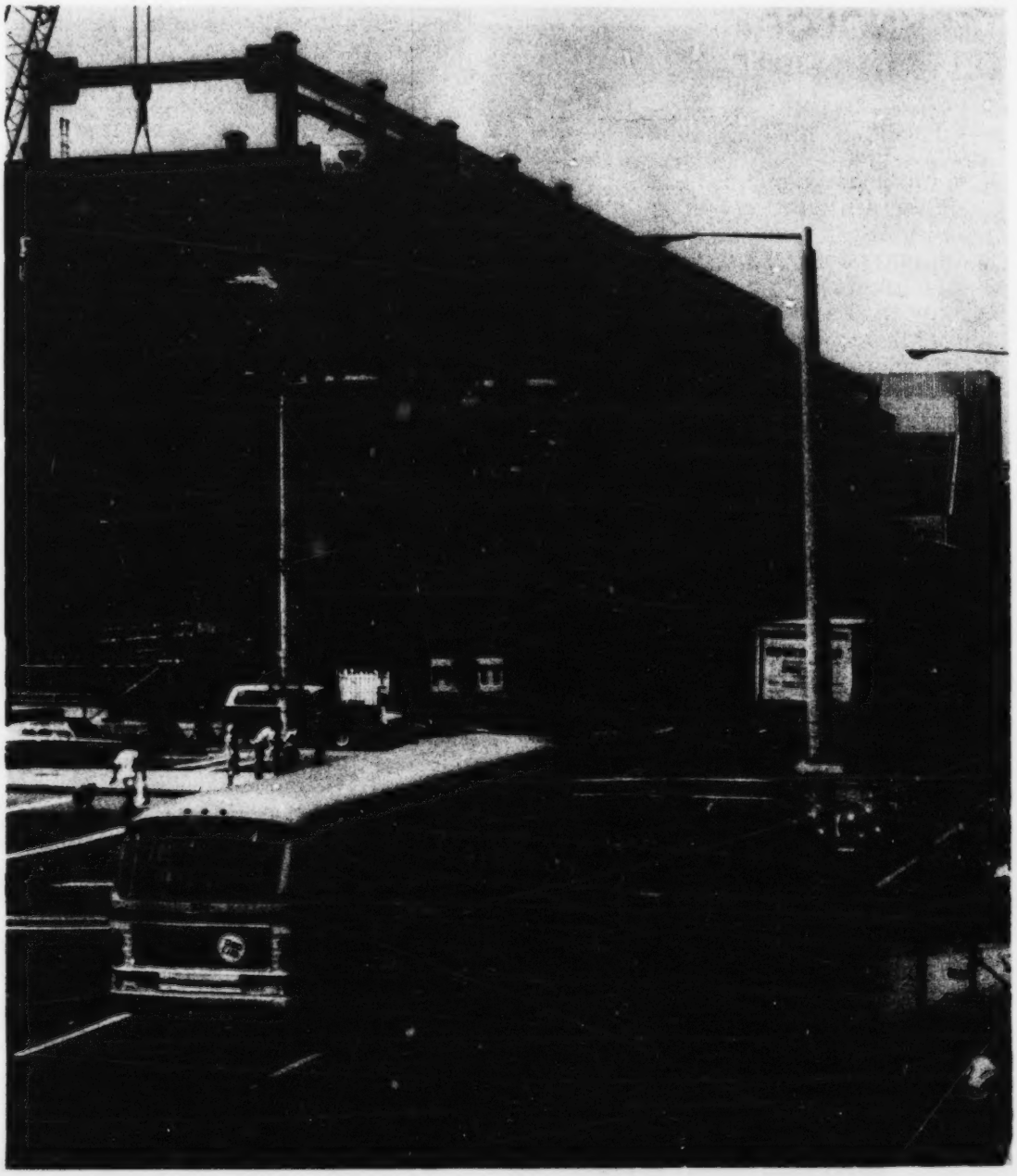
The municipality's plan for a dominant central city core area depends on the commercial and retail expansion of the downtown. Furthermore, the use and further growth of the community's entertainment and cultural facilities depends on a strong and vital central city. The rapid transit program as proposed will assist these plans. Conversely, the elimination or excessive delay of the transit program will significantly impede and could endanger this development plan.

General economic conditions throughout North America have produced a slowdown in the rate of economic growth in many areas including Hamilton-Wentworth. These conditions have meant stiffer competition among municipalities to attract new development and redevelopment, industrial, commercial and residential. Municipalities are competing in this way to provide jobs for residents and their children and to provide an increased tax base. New development and redevelopment means new business and households to help share the cost of local government services.

In this context, construction of the proposed rapid transit supports two development needs in Hamilton-Wentworth.

In the first place, investments in rapid transit in other communities, such as Toronto, Calgary, Montreal and Buffalo, have proven to be effective tools in attracting new development and focussing redevelopment. This is of importance to the Region as it has intensified its efforts in recent years to market itself in competition with other centres.

Second, there is a need to influence the pattern, scale and density of development that will occur. This pattern will be vastly different depending on whether or not rapid transit is provided in concert with this downtown development or if the development proceeds first with the rapid transit to follow. Alternate types of urban form will follow this decision: either a more concentrated downtown nucleus that conforms to the Official Regional Plan or a diverse suburban sprawl that is contrary to the Regional Plan and conflicts with other Regional Goals. This is of special importance in the downtown core where both the Region and the City have agreed that growth should be encouraged to the east of James Street, and that pedestrian-related activities must be encouraged.



TECHNOLOGY DEMONSTRATION

The proposed demonstration of the medium capacity ICTS rapid transit technology has been part of the overall rationale of the project. When the Provincial government made its ICTS funding proposal in 1978, it was interested in demonstrating the use of ICTS technology in an urban setting providing reliable, all-weather service, and in showing how a light, elevated guideway transit system could be designed to fit into downtown streets and residential thoroughfares.

Since 1978, three major implementation programs have been started or are near final contracting in other communities. These other projects will achieve some of the "Demonstration" objectives outlined above. Therefore, the Ontario Government interest in a demonstration in Hamilton-Wentworth would appear to have become less urgent as other public authorities have accepted ICTS rapid transit for use in their cities (i.e.: Vancouver, Detroit and Scarborough).

However, there remain a significant number of benefits for Hamilton-Wentworth through a demonstration.

Demonstrating the use of a steel guideway could lead to new marketing opportunities in other cities for local steel producers.

The Hamilton-Wentworth Mountain Corridor provides a unique opportunity to demonstrate the grade-climbing capability of the ICTS technology while providing reliable all-weather transit services across a formidable topographic barrier — the Niagara Escarpment.

In addition, the Mountain Corridor provides a unique opportunity to integrate the design of the transit system with the design of the dominant city core in a medium-sized city environment. The careful design of the rapid transit stations and passenger facilities in light of downtown elements such as the Plus 15 walkway proposals and the new inter-regional bus terminal will demonstrate the ability of rapid transit as an effective policy tool in central area planning.

Being among the first cities to invest in a modern transit service at the leading edge of technology would attract positive national and international attention and further improve the vitality of Hamilton-Wentworth. These demonstration objectives remain significant enough that they justify the funding arrangements proposed by the Government of Ontario.

FINANCING THE PROPOSED RAPID TRANSIT

CAPITAL COST

Under the offer made by the Provincial government, the Ontario and Federal governments would pay for 90% of the total capital cost of $111 million for the proposed rapid transit service. Officials of the Regional Municipality are actively seeking a firm commitment for the financial participation from the Federal Government.

Premier Davis has confirmed the Provincial position, in a letter of July 6, 1981 to Chairman Jones:

"... we are committed to building a system in Hamilton. We have begun the study phase. We want the system to go ahead. It is an absolute commitment this Government has made. **But let me make it clear that if the people of this region through the wisdom of their elective representatives choose not to have a system, if that is their choice, then the province has no intention of imposing a system upon the people of this region.**"

Regional support for the project should be dependent on a guarantee by the Government of Ontario and the Government of Canada that regardless of the resultant agreement between the two senior governments, the taxpayers of the Hamilton-Wentworth Region will pay no more than 10% of the total capital cost of this project.

The share of the capital cost to be paid by Hamilton-Wentworth is 10%, which is $11.1 million. It is the policy of the regional municipality that expenses of this kind be borne by property taxpayers within the urban transit area, which at the present time is limited to the City of Hamilton. The cost to the average City taxpayer would be, therefore, $14 per year for 10 years, according to an estimate by the Regional Finance Department based on money market conditions in August 1981. More recent studies by the IBI Group show that this amount will decrease if interest rates ease, and in fact had decreased to $13 based on September rates. These studies also show that the **"annual cost"** could be even lower if the project can be financed over a longer time period, and that the **"Total financing cost"** could be lower if spread over a shorter time period.

The normal financing mechanism applicable without this Provincial Support would have the city taxpayer pay 25% of the capital cost or $27.7 million. This equals $33 annually per taxpayer, an increase of $20 per year for each taxpayer over and above the current financial plan.

This in itself results in a very attractive opportunity to provide a rapid transit system whose need has been established by the Region's Official Plan and economic goals.

Regardless of the financing mechanism applied to the Hamilton-Wentworth portion of the project, it is clear that the current offers by the Government of Ontario have a limited life, and that there is no guarantee that they will be renewed at a later date.

This financial plan in itself does not

justify building a rapid transit system; but it does suggest that if the Hamilton-Wentworth Regional Council desires to provide the residents with a rapid transit system, then the current financial proposal is very attractive and will reduce the ultimate cost to the taxpayer.

Current inflationary trends will likely make such facilities even more expensive in the future: thus the significance of the decision **"whether or not to build now."**

OPERATING COST

The operation of the ICTS rapid transit system should not result in any increase in local taxes.

Forecasts suggest that when road congestion within the Mountain Corridor has developed in the 1990's and transit ridership has increased, it will be less expensive to carry passengers on the ICTS than it would be by bus. **However, as in the case of many transit systems, in the initial years of operation (while building ridership), it will be more expensive.** The Province of Ontario has in place special subsidy policies which are designed to encourage the construction of rapid transit systems and ease their introduction until the design ridership has been achieved.

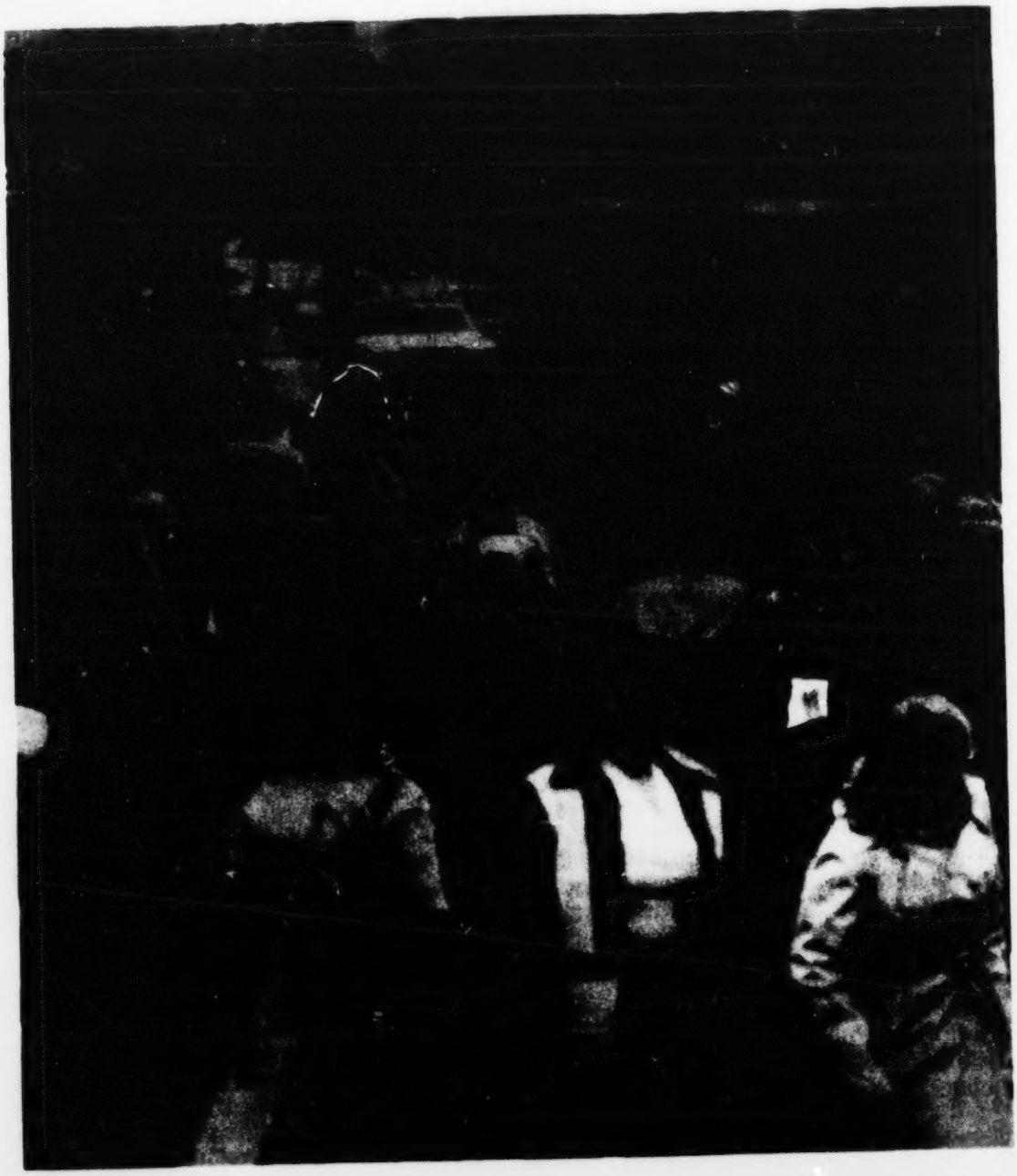
When rapid transit is built to encourage economic growth and to increase the efficiency of the urban transportation network — as this project is intended to — the Government of Ontario provides additional subsidies. The Minister of Transportation and Communications, the Hon. Mr. Snow, confirmed that this policy would apply to the Hamilton-Wentworth ICTS in a letter of August 18, 1981 to Chairman Jones:

"To facilitate the practical aspects of implementing regional-scale rapid transit projects as part of metropolitan urban development plans, the Province has undertaken to provide special transit operating subsidies to municipalities.

"The principle is accepted that the construction of a major rapid transit facility as a focus for future urban development investment will naturally involve public investment in transportation facilities which will not immediately achieve economic levels of ridership.

"During the period of growth of patronage, however, it is still essential to provide the high level of service necessary to support the fulfillment of the planned urban use development which will in turn provide the level of patronage for which the facility was designed.

"Accordingly, through agreement with the Municipality, the Province undertakes to increase its operating subsidy in such situations until an agreed upon target level of ridership is achieved. In return the Municipality will undertake, in good faith, to adhere to land use policies (zoning, density and other policies which are relevant)which will encourage the urban development objectives which justify the rapid transit services concerned."



PUBLIC SUPPORT FOR RAPID TRANSIT

PUBLIC INPUT

Has the public now had an opportunity to know about the project and to have a say?

Yes! The special consultant brought in to review the public participation program, Dr. Wilson Eedy, reported that "... the number and variety of methods used to involve the public during the study are relatively impressive. Reaction to the public participation program does not relate to the quantity nor to the participation techniques employed."

From October 1980 to June 1981, 14 Open Houses have been held to inform the public and to seek their input at each phase of the study process. As well, 145,000 flyers have been distributed to the residents of the Region, inviting the public to fill in a reply coupon to inform the study team of their preference and concerns. The project was advertised in daily and weekly newspapers, in buses, by door-to-door mailings and on radio and television. This information was a major element of the evaluation process of this study. In several instances, modifications occurred as a direct result of citizen input.

A major component has been the Community Advisory Committee on Rapid Transit (C.A.C.R.T.). Its mandate has been to inform the study team of community concerns and desires in respect of the proposed rapid transit service. In addition, special presentations have been given to any groups who have expressed an interest, such as schools, social, business and community organizations. Public notices in local newspapers and/or radio stations have been part of the public participation program.

It is suggested here that continuing information be provided to the public and that public involvement be specifically included in any "detailed design and implementation" phase of this project.

FOUR RAPID TRANSIT ALIGNMENTS IDENTIFIED
TELL US WHAT YOU THINK OF THEM

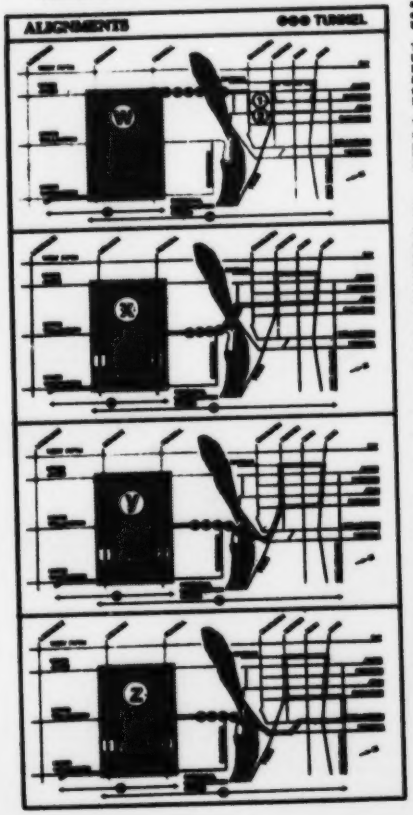
HAMILTON/WENTWORTH

ICTS Vehicle on elevated guideway.

metro canada limited
Hamilton-Wentworth Rapid Transit Project Office

What is This Project About?

The purpose of this one-year study is to provide the Regional Municipality of Hamilton-Wentworth with information on which to base a decision to proceed with the installation of an intermediate capacity rapid transit system (ICTS) linking downtown and the central Mountain. With the cooperation of the Federal government and interim funding of $3.5 million from Ontario, the Region is directing an examination of a number of possible transit routes to evolve at one which it will consider for implementation. The option has opened Council and staff members to direct the study and has engaged Metro Canada Limited to carry it out. Metro Canada has retained consulting firms to perform specific assignments in fields such as route planning, structural design, environmental assessment and public participation.



Four Alignments Selected

The many possible alignments published in mid-January have been analyzed through further engineering and planning studies. In addition, the comments and suggestions received from newspaper readers, from the more than 500 Open House visitors and from other interested groups have been reviewed and used in the evaluation of the alternative alignment segments. As a result of this technical analysis and public response, the four alignments shown on the maps have been recommended by project engineers and planners and approved for further investigation by Regional Council. Alignment W has two options in the downtown area, W1 or W2, Hughson or John. Alignments X, Y, and Z have local options as well - X1 or X2, Y1 or Y2 and Z1 or Z2, all of which relate to the choice of either Upper Wentworth or Parkdale and Upper Wellington or Mohawk. These options are shown in the maps.

The advantages and disadvantages of each alternative alignment are now being investigated in more detail. In the meantime, the study team would like to know what you think about each one. If you would like further information and the opportunity to discuss these routes with the study team, attend one of our Open Houses next week. We would really like to know what you like and dislike about each proposed alignment.

When current analysis of each alignment and a review of comments and suggestions have been completed, this additional information will be published and you will be invited to tell us which alignment you think is best and why. This will be done through an advertisement and Open Houses in approximately eight weeks' time.

Public Responses to Evaluation Factors

The study team has examined a number of important factors on which one alignment might rate well in some cases and poorly in others. At the last Open Houses, the public ranked the evaluation factors in order of importance - quality of service, natural environment, traffic movement, impact on business, capital and operating costs, social environment, impact on views, cost, visual integration, property, flexibility and regional growth. Seventy percent of the 500 people who either replied to the newspaper coupon or recorded their views at the Open Houses supported the project.

Use of a tunnel through the Escarpment was recommended by the study team to reflect the importance given by the public to quality of service, the preservation of the environment and of the views to and from the Escarpment.

The list of evaluation factors has been altered to reflect public responses. Regional growth, which has ranked low in importance, has been eliminated. The general appearance of the system is dealt with in the "visual integration" factor. Cost has been expanded to include both capital and operating cost. Noise impact, a new factor reflecting citizens' concerns has been added. These evaluation factors listed below will be used in the assessment of the four alignments presented here, in approximately eight weeks' time.

Factors to be Considered

Quality of Service: under it as accessible as possible, e.g. convenience of transfer to and from bus system, convenient pedestrian access and reduced travel time.

Natural Environment: how the least effect on the soil stability and vegetation of the area especially on the Escarpment.

Traffic Movement: maintain the capacity of the road system e.g. minimize removal of lanes both during construction and when the system is completed.

Capital Cost: cost for the construction of the system.

Operating Cost: ongoing operating and maintenance cost after opening of revenue system.

Visual Integration: ensure that the system is designed to complement the existing streetscape and will be attractive in appearance.

Property: how the least loss of land along the alignment and at station locations.

Flexibility: ease with which the system can be built in two stages.

Noise Impact: maintain existing sound level in each neighbourhood.

How You Can Participate - Come to an Open House

Come and find out more about this project and tell us what you think of these alignments by attending one of our Open Houses.

Monday, March 9	Transfiguration Lutheran Church 282 Pennsylvania Blvd. (Corner of Pennsylvania Blvd. and Upper Wellington) 12 noon - 9 p.m.
Tuesday, March 10	New Hamilton Public Library 55 York Boulevard 12 noon - 9 p.m.
Wednesday, March 11	St. Michael's Separate School 130 Homer Street (West of Upper Wellington, south of Mohawk Road East) 12 noon - 9 p.m.

OR: Visit the Project Office any day (9 a.m. to 5 p.m.) at 100 Main Street East, Hamilton.

Other Ways to Participate

- Complete and return the attached coupon.
- Phone Mr. Bob Brown (523-4213), our Community Information Representative if you have further questions or your organization is interested in the project.
- Watch for media coverage and further publications and Open Houses as the study progresses.

Which of These Do You Prefer?

- Please examine each alignment carefully
- Consider the advantages and disadvantages of each
- Decide which alignment and option you prefer
- Complete this coupon and mail it to us soon

	W W1, W2	X X1, X2	Y Y1, Y2	Z Z1, Z2	(circle one) (circle one)
I prefer alignment I prefer option					

My reasons are _____

In general, how do you feel about this project?

I support it ☐ I am undecided ☐ I am opposed ☐

Please tell us where you live so we can sort the replies by area:

Name (if you wish) _____

Address _____

Postal Code _____

PLEASE MAIL WITHIN A WEEK TO MR. BOB BROWN, COMMUNITY INFORMATION REPRESENTATIVE, HAMILTON-WENTWORTH RAPID TRANSIT PROJECT OFFICE, 20 MAIN STREET EAST, CONCOURSE LEVEL, HAMILTON, ONTARIO, L8N 2W6.

<CUT ON DOTTED LINE

PUBLIC OPINION

Approximately 61% of all residents of Hamilton-Wentworth are in favour of the proposed ICTS.

The most scientific and reliable analysis of public opinion can be found in the Social Impact Assessment, prepared by Marketing Decision Research of Hamilton, with the assistance of Professor F. Jones of McMaster University. This is a useful and instructive document for those concerned about the state of:

i) public support or opposition to the proposed project

ii) the amount and nature of public knowledge and awareness about the impact and details of the project.

The assessment examined measures of:

- quality of life
- perceptions of present community problems
- present use of public transit
- awareness of information provided by the Rapid Transit Project Office
- previous exposure to elevated rapid transit systems elsewhere
- suggestions for alternate modes of rapid transit in this corridor
- mitigative measures, and
- the overall predisposition to be in favour of, or opposed to, the ICTS proposal

Marketing Decision Research found that:

- approximately 61% of residents of Hamilton-Wentworth were in favour of the proposed ICTS when surveyed. "One can be confident that between 58.9% and 63.1% of the total number of residents were actually "in favour of the ICTS at the time of the survey," the subconsultants concluded.
- all parts of the Region favoured ICTS except residents living directly on the street proposed for the route and the central part of the City of Hamilton (Wards 3, 4, and 7).
- those living close to the proposed route (1 to 3 blocks away) were most in favour of ICTS (76%). They anticipate real benefits from the proposed rapid transit service.
- better informed residents favoured ICTS more than poorly informed residents: ". . . there was a tendency for those respondents who had higher awareness scores to be more predisposed to favour the ICTS."

RECOMMENDATION

If the Regional Government continues to support its Official Plan, then the Regional Municipality of Hamilton-Wentworth should avail itself of the present financial and development opportunity and should approve construction of the ICTS rapid transit system as proposed.

The previous pages have shown that:

1. The proposed rapid transit is an integral and required element of the approved Regional transportation plan.
2. The proposed rapid transit will provide a valuable transportation service to tens of thousands of Hamiltonians daily.
3. The proposed rapid transit will support regional economic development objectives and the proposed financial arrangements will result in the minimum financial cost to the Hamilton taxpayer.
4. The proposed rapid transit, using the ICTS technology, will meet the Hamilton-Wentworth transit requirements with the best combination of cost, service and minimum impact.
5. The proposed rapid transit will provide Hamilton-Wentworth the opportunity to demonstrate the use of steel in guideway construction and the integration of the system with its downtown plans.
6. The proposed rapid transit will receive special capital and operating funding assistance, minimizing the cost to the Region.
7. The proposed rapid transit is favoured and supported by the public.

The following pages present specific findings of the study. They show that:

8. The proposed rapid transit will have very minimal negative community impacts.

Therefore:

The only conclusion that can be drawn, and the recommendation of this study, is that the Region should approve construction of the ICTS rapid transit system.

REQUIRED SUPPORTING ACTIONS

The study has identified and recommended several supporting actions that should be taken as the Region constructs the rapid transit service. These are described in detail in the technical reports and the draft environmental assesment document, and include the following:

- the public should continue to be kept fully informed of the progress of the project and of the specific measures being planned to minimize inconvenience during construction.
- residential property owners along the route should be approached on an individual basis to resolve their concerns about the service.
- specific actions should be taken to mitigate any impact that may occur due to the operation of the system in sensitive areas such as near St. Joseph's Hospital, the MacNab Street Church and the St. Charles Church.
- selective rezoning should be instituted to encourage development near the downtown stations, restrict it near the St. Joseph's station, and control it near the Mountain stations.
- a program of tree planting and general landscaping should be undertaken, both along the route and in station areas.
- traffic and parking signage and control should be reviewed.
- HSR bus routes should be carefully replanned to improve service and provide full integration with rapid transit. Express bus services to major employment and activity centres should be provided.
- the possibility of bringing GO-train service into the TH&B station on Hunter Street should be re-examined.
- the proposed new inter-regional bus terminal should be constructed beside or as part of the King William rapid transit station. The construction of a new inter-regional bus terminal has been approved by TATOA.
- the fare for rapid transit should be the same as the fare for HSR buses. Free transfers should be offered to and from buses.
- provision should be made in the rapid transit design for future additional stations.
- the priority and routing of possible future extensions to the south, to the west, and to the Bayfront industrial area should be examined.

BACKGROUND TO THE STUDY

TRANSIT STUDIES

Improvement of transportation services within Hamilton-Wentworth is one of the activities the Region wishes to take to improve its ability to compete for industrial and commercial development and to attract investment capital from the private sector. Several major road improvements are proposed, and Regional Council has given public transit a high priority for the Central Mountain crossing.

This study is one in a series of transportation studies undertaken in this municipality since 1969. Early work defined the ultimate shape of the future road and transit transportation networks, and later studies carried this to the point of determining the priority corridor for rapid transit. These findings have been incorporated into the City and Region Official Plans.

The municipality set priorities for rapid transit corridors based on its 1976 report. The Central Mountain corridor was identified as the first link of a rapid transit system that would also serve the needs of the Bayfront industrial area and future east-west transportation needs.

1969 — Hamilton Transit Planning Committee recognized future need for all-weather rapid transit link between Mountain and downtown.

1970 — Hamilton Transit Commission confirmed the physical feasibility of constructing rapid transit in Hamilton.

1973 — City of Hamilton reported on transportation strategies, including the potential to link downtown to the Mountain with an intermediate capacity transit system.

1976 — Transportation Development Agency (Canada) reported that the Hamilton Mountain to downtown as the priority transit corridor.

1976 — City of Hamilton, Transit Commission and Region identified Mountain to downtown as the priority transit corridor.

STUDY FUNDING

In January 1980, representatives of the Region requested that the Ontario Ministry of Transportation and Communications provide funding for an ICTS rapid transit service study for Hamilton-Wentworth.

The Region made this request in response to an offer, first made by the Provincial government in 1978, of special assistance for an ICTS project.

In making this request, the Region acted on the basis that its own draft Official Plan identified as high priority the need for a medium-capacity rapid transit service to link the downtown core and the Central Mountain. This would serve planned transportation and development patterns in the city.

In response to Hamilton-Wentworth's request, the Provincial government provided a grant of $3,500,000 for the Region's pre-implementation study of ICTS. The Region subsequently entered into a contract with Metro Canada Limited as its Prime Consultant and project manager. Metro Canada Limited is a wholly-owned subsidiary of the Urban Transportation Development Corporation which was established by the Ontario government to act as an industrial catalyst for new public transportation technologies.

MOUNTAIN-TO-DOWNTOWN CORRIDOR

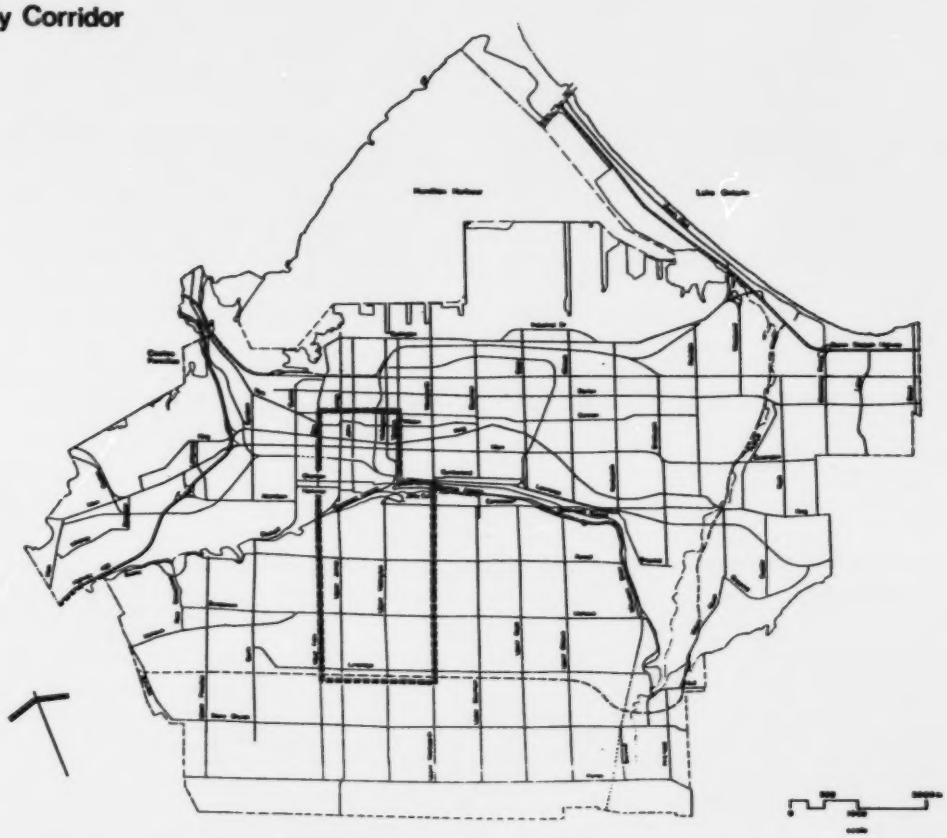
The rapid transit corridor defined in the Official Plan of 1980 and approved by Regional Council for this study is shown on the map opposite. The boundaries of the corridor to be studied were defined by the Region in 1980.

This is the priority location for rapid transit. The north-south central-Mountain-to-downtown corridor was selected for several reasons. Because employment opportunities in the downtown are planned to increase more rapidly than those in other areas of the City, past studies by local government have shown that new transport facilities will be required to take residents to and from their downtown workplace. The downtown core will increasingly represent the future social and cultural focus for Hamilton-Wentworth residents and their children.

Since the area of most rapid residential growth is planned to be on the Mountain, the major investment in additional transport facilities must service this area, and must connect it with the downtown. Thus, there is a priority need for an expanded and improved means to allow more people to travel across the Escarpment in a manner which provides the greatest possible protection for the natural environment.

Study of the Mountain corridor is based on the potential future ridership ; the Mountain corridor represents the transit corridor of highest ridership in the Region.

Study Corridor



URBAN DOCUMENTATION CENTRE
RESEARCH UNIT FOR URBAN STUDIES
McMASTER UNIVERSITY
HAMILTON, ONTARIO

WHY PICK THIS ROUTE (ROUTE W)?

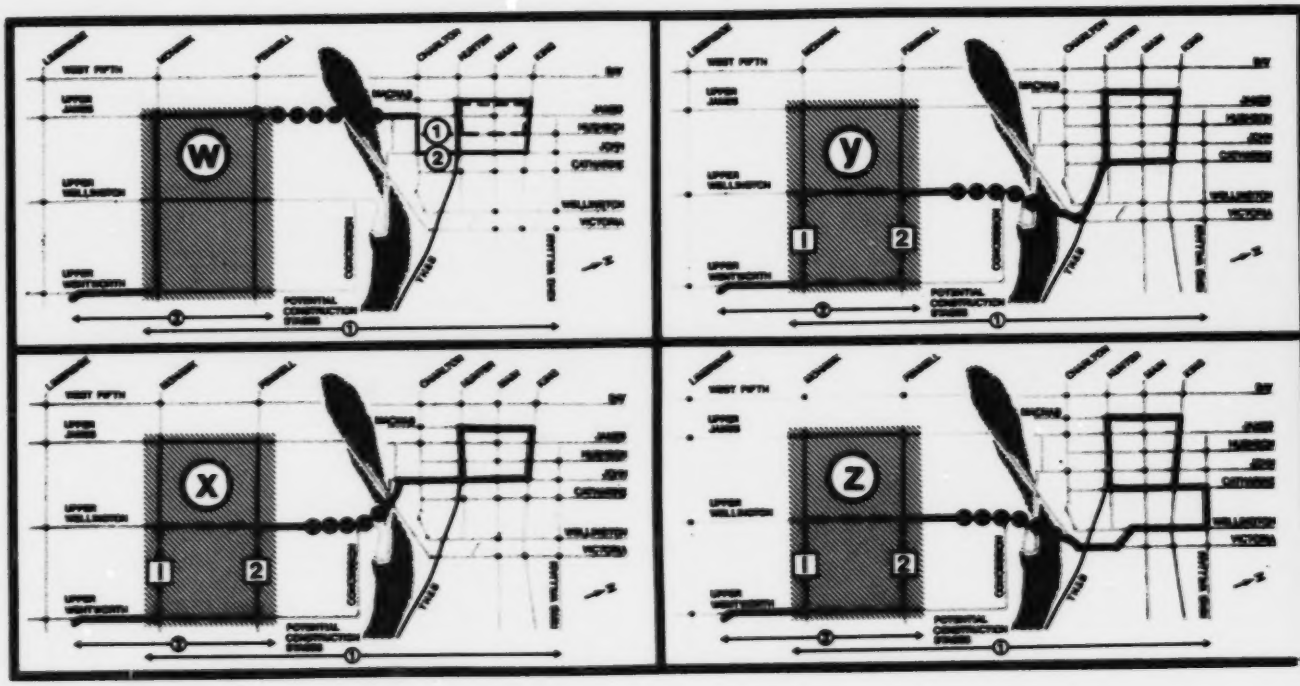
The study team began by reviewing a total of 51 possible routes within the central-Mountain to downtown corridor. This number was reduced to 12 feasible routes for rapid transit.

Regional Council has dealt with, among other things, information concerning the identification of these 12 feasible routes and the reduction from 12 to four in the number of feasible routes to be considered. These four routes came to be known as W, X, Y and Z respectively.

According to the report of the Region's Technical Advisory Committee Region, all four routes would satisfy the basic transportation service needs of people in the Central Mountain-to-Downtown corridor. Key differences among these routes were analyzed in terms of 11 factors:

- Cost
- Ridership

●●● TUNNEL



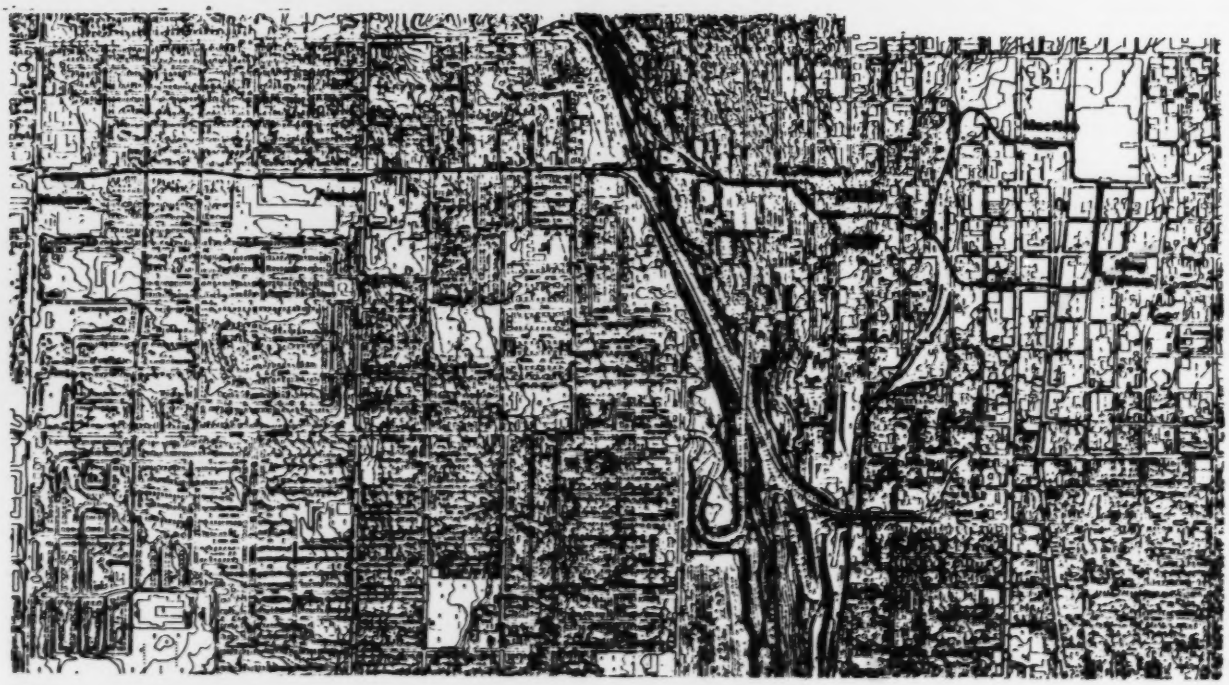
- Potential station sites
- Travel times
- Surface transportation
- Property requirements
- Construction
- Visual perspective
- Development potential
- Natural environment
- Expansion

Most of these factors could not exhibit major differences among these routes. As a result, the primary choice was one of minimizing social impact.

Routes X, Y and Z on Upper Wellington would offer slightly better transit service at the cost of significant social impact on the Mountain, while Route W would substantially reduce the social impact on the Mountain but, at the same time, would provide slightly less transit service and would create slightly higher social impacts below the Escarpment.

In July, Regional Council selected Route W as the preferred route for further consideration in the final phase of this study.

Route W



DESCRIPTION OF THE PROPOSED RAPID TRANSIT SERVICE

The preferred route, chosen by Regional Council in July, 1981 for the final study, is shown on the map. A return trip would be approximately 5 miles long.

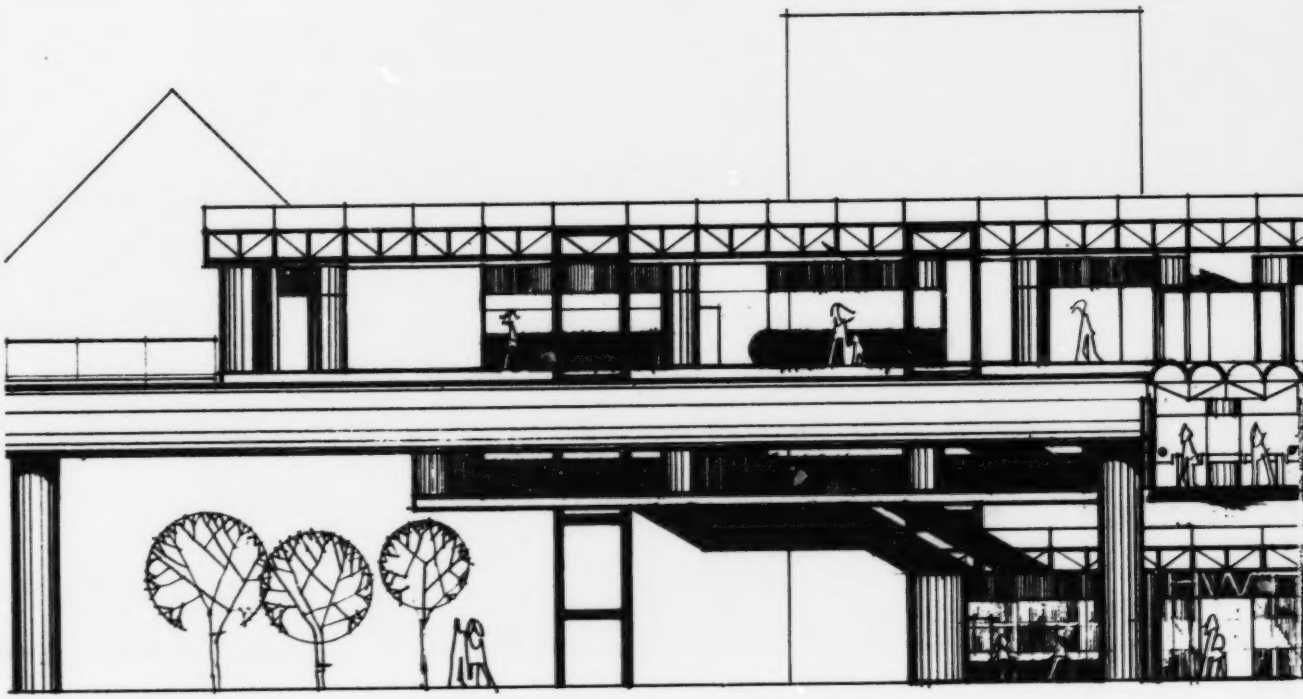
The route combines a downtown distribution loop with all-weather, rapid and reliable direct access to the Mountain community, as far as the intersection of Mohawk Road and Upper James Street (Highway 6).

Stations

Five stations are proposed along the route to serve the main downtown employment, shopping and cultural areas, the new GO-Transit terminal, St.Joseph's Hospital and major bus transfer points as follows:

- Mohawk (at Upper James)
- Fennell (at Upper James)
- St. Joseph's (near the Hospital)
- MacNab (at King/Main)
- King William (at John)

In addition there would be two other potential station sites:



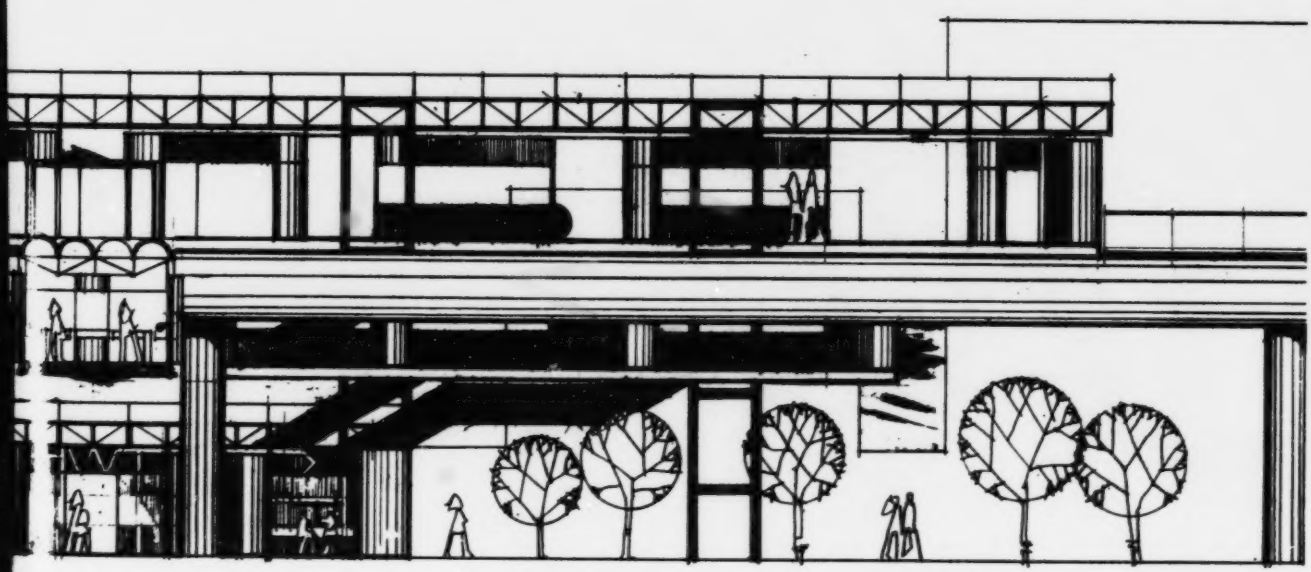
- Main/Catharine
- TH&B Railway Station

Each station would be architecturally designed to reflect the identity of the surrounding neighbourhood and proposed community development.

Each station would be served by HSR buses. HSR bus routes should be carefully replanned to improve service and provide full integration with rapid transit and express bus service to employment and activity centres (such as McMaster University, Mohawk College, the airport, and the Bayfront industrial area). These new bus routes would make the entire Hamilton-Wentworth transit system more accessible to a greater number of people.

Bus and rapid transit waiting areas should be protected from the weather. Transfers to and from buses would be direct. Escalators would serve all rapid transit stations.

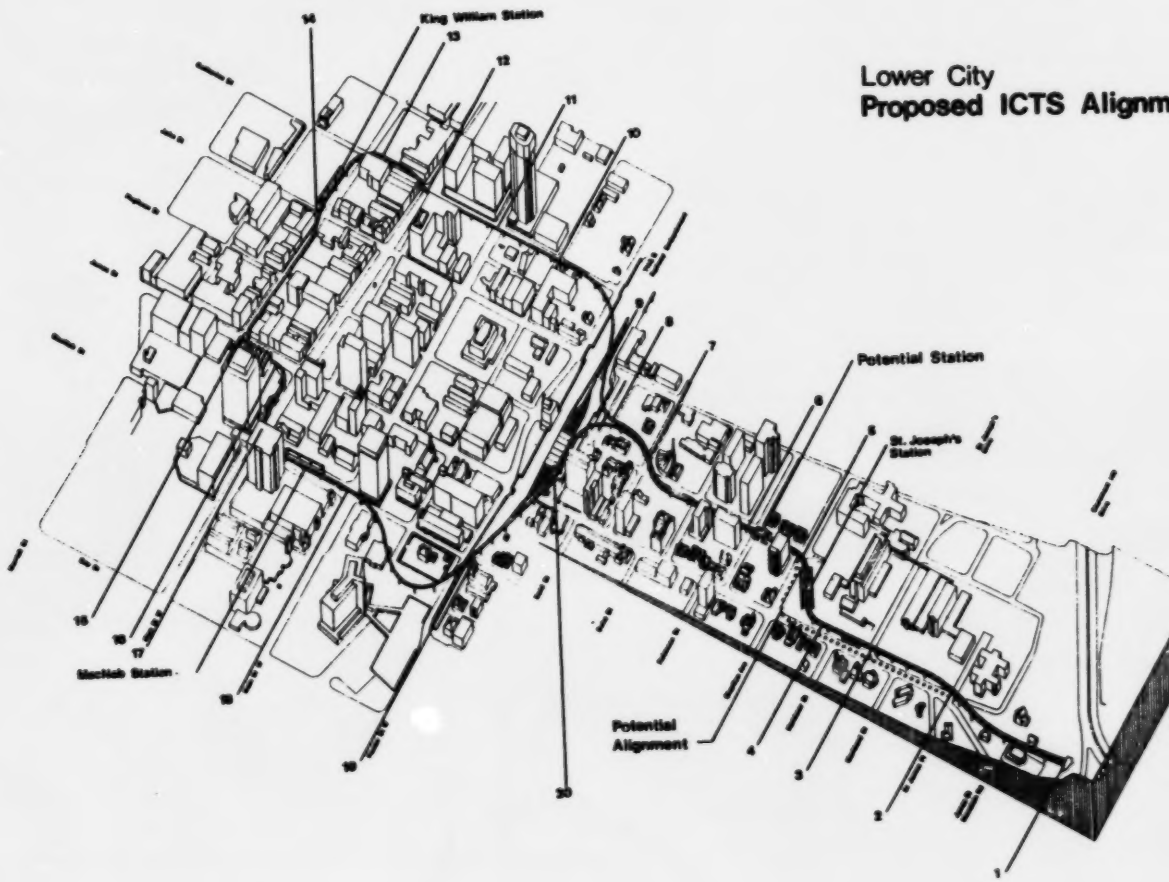
In the downtown core, stations could be designed to fit into plans for a network of overhead pedestrain walkways (such as Plus 15 as now under consideration by City Council) if desired. Protected walkways could be provided to major office buildings, malls and recreation centres, subject to the approval of Regional and City Council.



Passenger Service

Rapid transit trains would serve each station approximately every 3 minutes in rush hour and 5 minutes at other times. This service will be regular and more reliable than buses in bad weather conditions. As the number of riders increases, trains will arrive more frequently. Trains will start runs with few cars; more cars can be added to trains as required. Each vehicle in the train provides seats for 32 passengers. Vehicles are roomy enough (41.7 ft. x 8.2 ft.) to carry up to 55 standees. During most of the day, there will be seats for everyone. Riders would have to stand only during rush hours.

In fact, 9 out of every 10 passengers will have a seat. Rapid transit service would operate from 5:30 a.m. to 1:30 a.m.



Lower City
Proposed ICTS Alignm

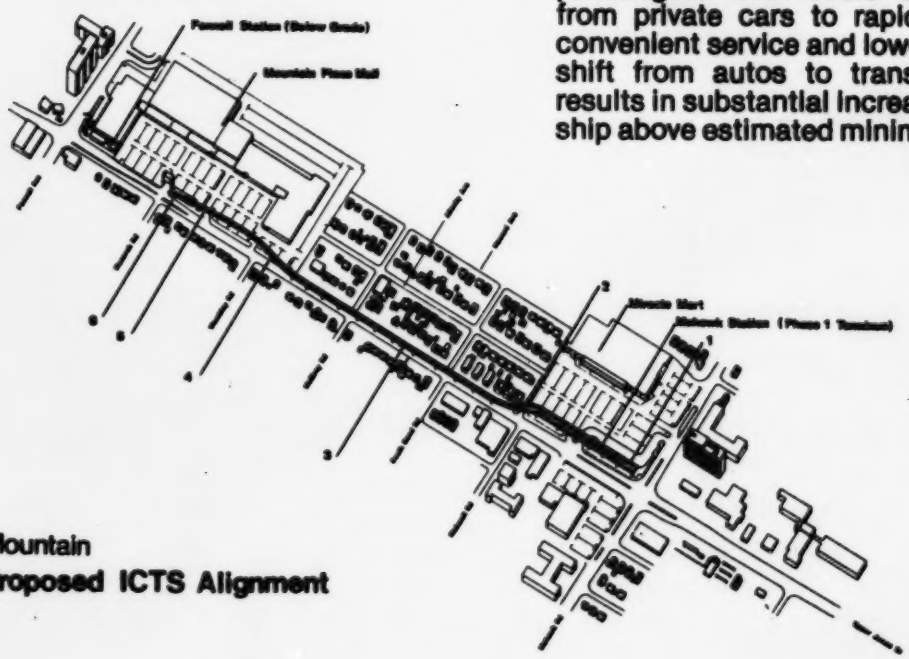
Travel Time

Travel time between Mohawk – MacNab stations would be 8 minutes, cruising at a speed of 45 miles per hour. This represents a time saving of 50%, when compared to existing travel times of HSR buses on this route. As the existing Mountain access roads fill up, speeds of buses and autos will decrease. Rapid transit, by that time, would provide service that is three times faster than HSR buses.

Ridership

It is forecast by the sub-consultants, Marshall, Macklin, Monaghan/Hatch Associates that approximately 30,000 people will use the proposed rapid transit, starting on opening day. This represents a total of approximately 8,200,000 riders a year in the first year of operation.

By the year 2001, the sub-consultants further estimate that 65,000 people a day will be riding on rapid transit. This is a total of 19,510,000 each year. These estimates represent the minimum ridership to be expected on rapid transit. No allowance has been made for passengers who would be attracted from private cars to rapid transit by convenient service and lower cost. This shift from autos to transit normally results in substantial increases in ridership above estimated minimums.



Mountain
Proposed ICTS Alignment

Social Impact

The social impact assessment study was carried out by the Hamilton firm, Marketing Decision Research, as part of the overall draft environmental assessment.

Those surveyed were asked the following question: "Taking everything into consideration, are you in favour of, or opposed to, building the rapid transit system as presently proposed—if the property tax effect to the average Hamilton taxpayer was $14 per year for 10 years — and if there is no extra burden on local property taxpayers for operating costs?"

The geographic breakdown on the response was as follows:

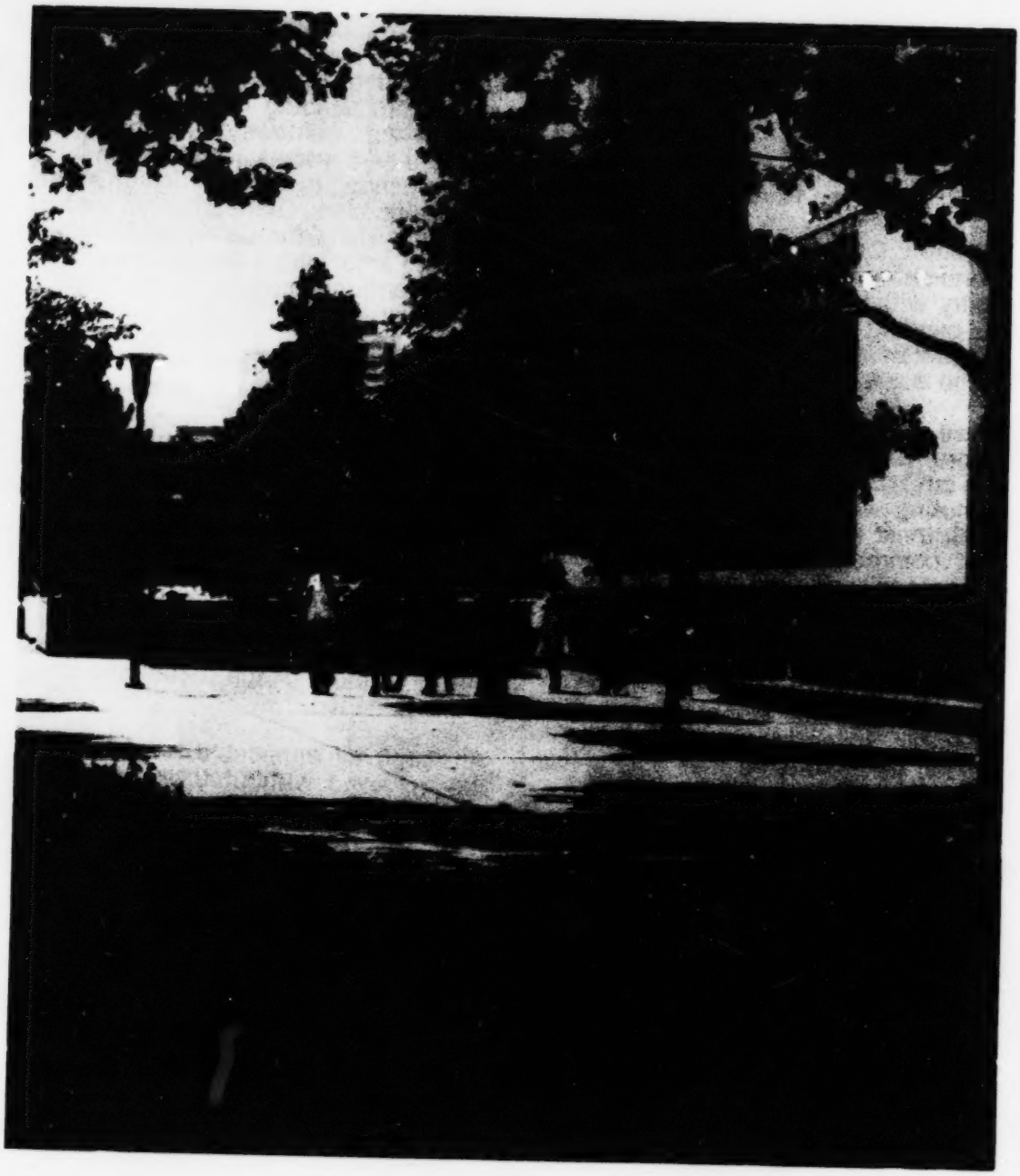
	In Favour	Opposed
Region	61%	
City of Hamilton		
Ward		
1	72%	
2	64%	
3		52%
4		56%
5	70%	
6	52%	
7		51%
8	59%	
Ancaster	72%	
Dundas	64%	
Flamborough	63%	
Glanbrook	71%	
Stoney Creek	79%	

The sub-consultants also found that residents directly along the proposed route have "very serious concerns regarding the ICTS. These should be investigated further to identify effective and sensitive measures which will mitigate the perceived disbenefits of ICTS for individuals living in this area ... (directly along the route), the residents do not have a concensus among themselves as to what single mitigative measure would most satisfy their prime concern that property values might decrease."

The most serious concerns of those living directly along the route were as follows:

- possible decrease in property values
- increased property taxes
- noise and vibration
- possible increase in crime and vandalism

These concerns are addressed in separate studies listed at the end of this summary report.
In addition, the social impact assessment found that the more people were aware of and informed about the proposed rapid transit service, the more they tended to favour it.



Noise and Vibration Study

The specialist consultants, Wilson, Ihrig and Associates Inc., found ICTS was sufficiently quiet to provide a rapid transit service in Hamilton that meets all noise standards of the City of Hamilton, Ontario Ministry of the Environment and the public transit industry without any special measures. The existing level of street noise is substantially higher than the ICTS sound levels.

These consultants also found that in several areas which now have extensive bus traffic, based on proposed bus re-routing with the implementation of ICTS, there is the potential for significant community noise reduction; for example in the Gore Park, John Street, James Street and Jolley Cut areas.

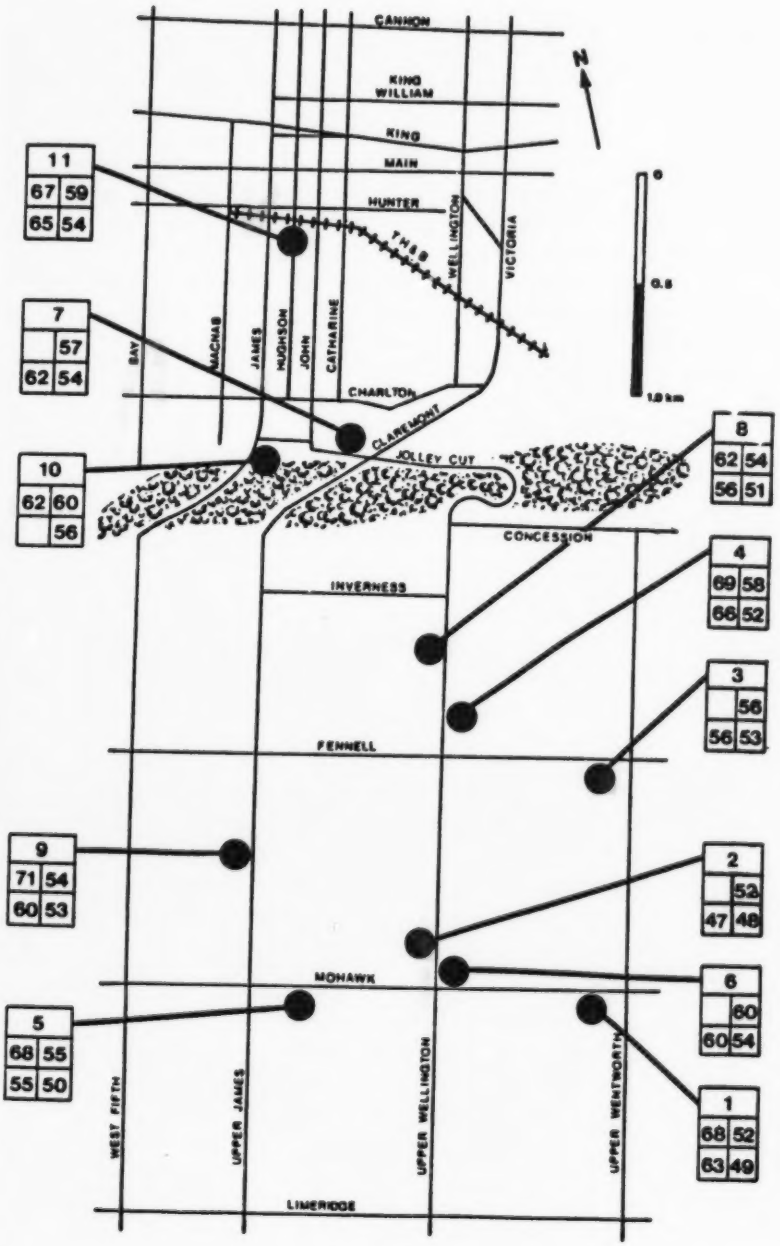
ICTS was designed to offer a smooth and quiet rapid transit service in an urban environment. Electrical power, a steerable axle assembly and solid-welded tracks ensure that only a low level of noise is generated.

In general, the findings from the Noise and Vibration Impact Assessment report indicates that, although the noise from the ICTS vehicle will not be unnoticeable, there will be no adverse noise impact when compared to City of Hamilton noise by-laws and Ontario Ministry of the Environment and Transit Industry environmental standards.

Vibration produced by transit travelling on the elevated guideway will have no adverse impacts anywhere along the system as long as the guideway column footings are at least 5 metres away from building footings. In areas where the guideway columns are closer than 5 metres, mitigation is recommended in the final design stage at specific sites. One such area for further analysis is the Canadian Football Hall of Fame, where the guideway column locations may be within the 5 metre distance.

The vibration produced by trains travelling underground will create no adverse impacts when compared with criteria developed from other transit systems and environmental standards. However, during final design, further design analysis is recommended in the shallow tunnel section along Upper James Street between Brucedale Avenue and Fennell Avenue to ascertain that there will be no adverse vibration impacts once the exact configuration and depth of the tunnel structure are determined.

Although all applicable noise criteria are achieved without the use of any special noise reduction measures, during final design further analysis is recommended of the noise levels produced by the ICTS trains at the second and third storey apartment levels of the apartment units on the corner of Hughson and Young Streets. This is recommended since some of these apartments have balconies which directly face the alignment.



Long Term Noise Monitoring Locations

NOTE:

ICTS SOUND LEVELS FOR 2 CAR TRAINS RUNNING IN THE PEAK HOUR WILL BE APPROXIMATELY 46 LEQ (AT 50 FEET) IN FRONTYARDS AND 43 LEQ (AT 100 FEET) IN BACKYARDS. THIS IS BELOW EXISTING LEQ MEASUREMENTS.

LEGEND

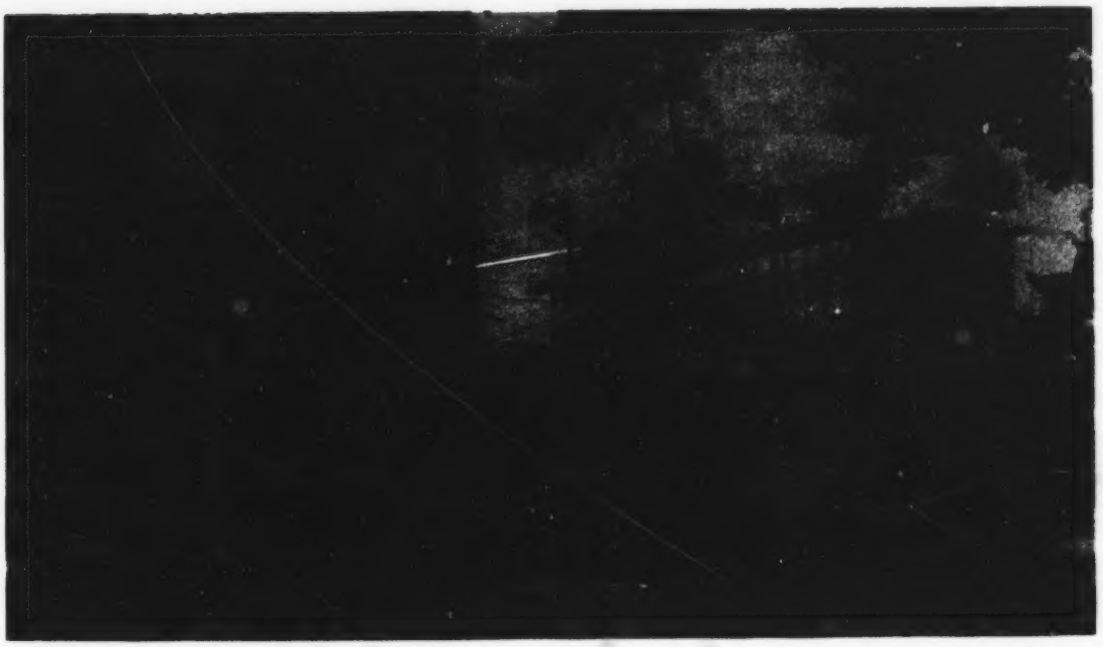
*MEASUREMENT SHOWN IN LEQ.

Appearance

The elevated guideway would appear differently to different viewers. Even straightforward comparisons such as steel vs. concrete as the primary guideway material will draw a range of comments. (Both materials have been shown to be feasible, and consideration should be given to using some steel sections in this system as a demonstration of steel's capabilities.) Every opportunity has been taken in designing the overhead guideway to make it as attractive as possible. In the immediate downtown, the guideway will be 11½ feet wide, the width of a normal traffic lane, while south of the TH & B tracks and on the Mountain it will be 22 feet wide. It is recommended that architectural treatments be applied to the guideway to make the structure compatible with its surroundings in sensitive areas.

Long spans between support columns (100 feet or more apart) and the clean lines of the slender guideway and columns make it fit well into an urban street scape.

The architectural studies have shown that shadowing will not be a significant problem, and that the incorporation of signage, landscaping, and special surface treatments should be considered at the final design stage. This is an area for extensive public involvement.



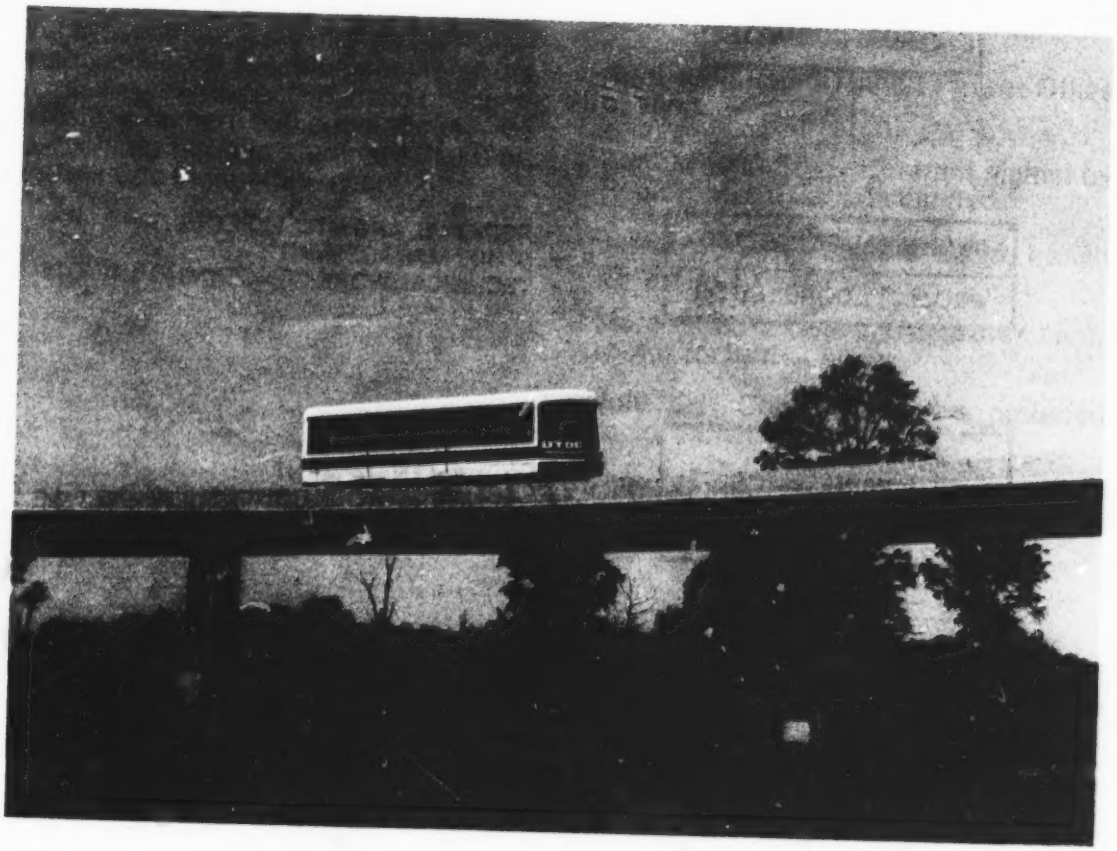
Natural Environment

The proposed rapid transit service would have very little effect on the natural environment. Neither unique nor endangered habitats or animal species would be affected. The chosen route avoids the Bruce Trail.

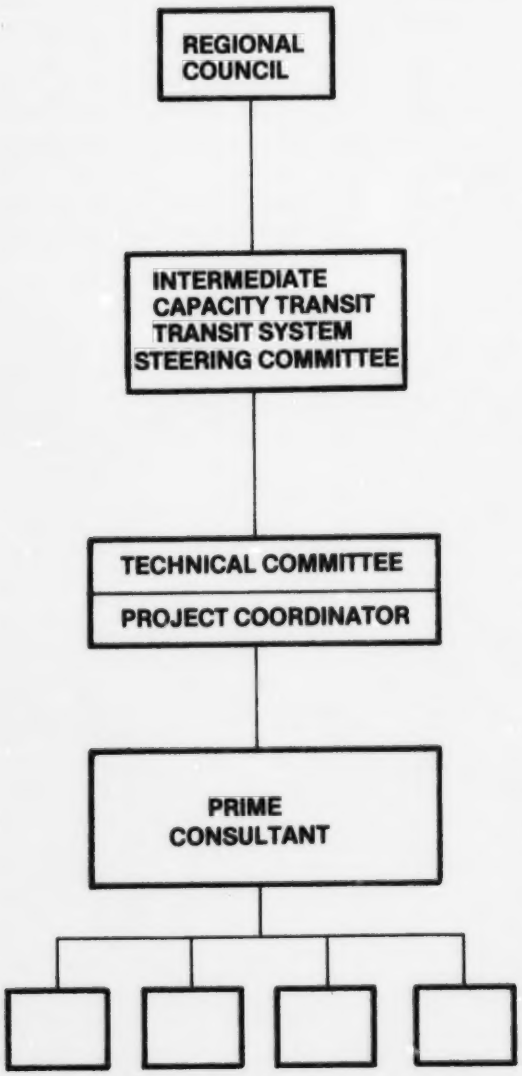
The greatest effect would be the loss of approximately 50 trees near the north portal, near the bottom of the escarpment, which cannot be replaced at that location because of the thickness of the existing canopy of trees.

It is recommended that trees be planted along the route and around stations, as part of a general landscaping program.

Rapid transit would help preserve the central part of the Niagara Escarpment by acting as a substitute for a new access road or widenings of existing access roads across it.



STUDY ORGANIZATION



ELECTED MUNICIPAL COUNCILLORS
- ALL DECISION-MAKING AUTHORITY

9 MUNICIPAL COUNCILLORS, 1 REPRESENTATIVE OF THE MINISTRY OF TRANSPORTATION AND COMMUNICATIONS (MTC)
- DETAILED REVIEW OF TECHNICAL COMMITTEE RECOMMENDATIONS

REGIONAL AND MTC EXPERTS
- STUDY MANAGEMENT
- TECHNICAL WORK CONCERNING THE ICTS

METRO CANADA
- STUDY MANAGEMENT
- TECHNICAL WORK CONCERNING THE ICTS

SPECIAL PROFESSIONAL CONSULTANTS
- TECHNICAL ANALYSIS IN INDIVIDUAL AREAS OF EXPERTISE

ICTS STUDY ORGANIZATION

The study has been administered on behalf of the Region by its Technical Committee, and its Project Co-ordinator, composed of Regional, City, and Ministry of Transportation and Communications staff. The Technical Committee reports to the Intermediate Capacity Transit Study Steering Committee, a Council committee which in turn passes recommendations to Regional Council for decisions.

Metro Canada, as prime consultant and study manager, has co-ordinated the day-to-day technical activities of the various sub-consultant teams. Each of the sub-consultants has been responsible for specific aspects of the study in their respective areas of expertise. The expert sub-consultants who participated in this study are listed on the inside cover of this report.

ICTS STUDY HISTORY

1969 to 1976. Region, City and HSR studies of future transportation requirements.

1979. Draft Official Plan defines future need for rapid transit in central Mountain corridor (June 1980 — Official Plan approved by Regional Council).

January 1980. Province agrees to fund study.

April 1980. ICTS Steering Committee recommends study and organization.

April 1980. Rapid Transit Project Office opened.

August 1980. Study Contract signed by Region, Metro Canada Limited.

January 1981. Feasible rapid transit routes received by Council.

March 1981. Council approves four routes for further study.

July 1981. Council approves preferred rapid transit route

October 1981. Study complete

STUDY REPORTS

- Rapid Transit Rationale: Interim Report
- Goals and Objectives for the Rapid Transit System
- Evaluation Framework and Preliminary Criteria
- Analysis of Public Comments: Initial Open House
- Generation of Feasible Alignments: Planning Document
- Generation of Feasible Alignments: Engineering Document
- Generation of Feasible Alignments: Appendix A: Engineering Document
- Generation of Feasible Alignments: Appendix B (2 Vols.): Engineering Document
- Existing Corridor Natural Environment: Environmental Document
- Alignment Generation Criteria and the Generated Alignments
- Environmental Assessment Report: Working Table of Contents
- Human Environment Report
- Evaluation Methods and Criteria for Shortlisting Alignments
- Analysis of Public Comments and Ranking of Evaluation Factors
- Analysis of Alignment Segments (3 Vols.): Planning Document
- Analysis of Alignment Segments: Engineering Document
- Analysis of Alignment Segments (2 Vols.): Environmental Document
- Recommended Alignments and Summary Evaluation
- Guideway Design Guidelines
- Hamilton Street Railway Transit Survey
- Evaluation Methods and Criteria for Recommended Alignment Selection
- Analysis of Options for Shortlisted Alignments: Engineering Document
- Analysis of Options for Shortlisted Alignments: (2 Vols.): Planning Document
- Analysis of Shortlisted Alignments and Their Options: Environmental Document
- Evaluation of Mohawk/Fennell Square Options
- Evaluation of Southern Access Options
- Analysis of Shortlisted Alignments: Engineering Document
- Analysis of Shortlisted Alignments (3 Vols.): Planning Document
- Analysis of Public Comments Selected Alignments
- Public Comments on Route Evaluation Factors
- Rapid Transit Study: Route Choices: Summary of Findings
- Analysis of Public Ranking of Selected Alignments
- Summary Evaluation of Rapid Transit Routes and Recommendation of Preferred Route
- Steel Alternative Guideway Study: Feasibility Report
- Steel Alternative Guideway Study: Appendices
- Data Bank Index
- Talus Monitoring Program: Summary of Measurements
- Geotechnical Summary Document
- Ambient Noise Survey
- Noise and Vibration Impact Assessment
- System Operating Requirements
- Summary of Rapid Transit Public Participation Program
- Social Impact Assessment
- Economic Impact Assessment
- Estimate of System Capital and Operating Costs
- Comparison of Alternative Transportation Modes
- The Functional Plan Report
- Draft Environmental Assessment Report
- Final Report: Summary